NOTES BY THE EDITOR.

CONVENTION AT OMAHA.

On April 5, the Chief of the Weather Bureau announced by a circular letter that a convention of Weather Bureau officials would be held at some time during the coming summer at Omaha, Nebr., the membership not to be restricted to officials engaged in the work of the Climate and Crop Service, but to include other officials of the Weather Bureau and a few invited specialists. As transportation rates are reduced on account of the Trans-Mississippi and International Exposition, it will be possible to make the journey at decidedly less than the usual cost. It is also expected that the Honorable Secretary of Agriculture will be present at some time during the convention. The general object of the convention is to afford opportunity for discussing methods for the extension and improvement of the work of the Bureau. Brief papers, not exceeding 1,500 words, relative to the practical and scientific work of the Bureau, may be submitted by any one interested in the convention. In order to properly arrange the programme, members are invited to suggest topics for discussion as early as practicable.

On account of the pressure of work at Washington, it has been found best to hold the convention as late as possible and a circular of July 7, announces that it will be held on Thursday and Friday, October 20 and 21. These dates will make it more convenient for section directors to leave their stations; doubtless the weather will also be much more agreeable than it is in midsummer, and it is hoped that there will be a large gathering of meteorologists. Those contributing papers or suggesting topics for discussion should correspond immediately with Mr. James Berry, Chief of the Climate and Crop Division, Weather Bureau, Washington, D. C. If the convention is as large as is expected, it will probably be necessary to establish the rule that no person shall speak more than once on a given topic, or for a longer period than five minutes, unless by unanimous consent.

The Commercial Club of Omaha has kindly tendered its rooms in the Board of Trade Building for the use of the convention. Special rates have also been conceded by hotels, ranging from $1.50 upward.

EVAPORATION AND TEMPERATURE.

In the MONTHLY WEATHER REVIEW for April, page 167, we have given measurements of temperature at various depths in a quiet lake in New Brunswick; the measurements were made on July 1, 1896. In connection with this subject, Prof. L. G. Carpenter, as Chief of the Department of Civil and Irrigation Engineering at the State Agricultural College, Fort Collins, Colo., sends an early copy of Bulletin No. 45, published by the Agricultural Experiment Station connected with the college. This bulletin is devoted to the subject of loss of water from reservoirs by seepage and evaporation. From a meteorological point of view the evaporation into the free atmosphere has much interest.

We have already in Volume XXIII, pp. 421–422, explained how difficult, if not impossible, it must ever be to determine from ordinary observations of the evaporometer the quantity of water added to the atmosphere daily by evaporation from the oceans, lakes, and continents. One of the principal elements of uncertainty in determining *a priori* the quantity of evaporation from a given surface of water consists in our uncertainty as to the temperature of the surface water and the velocity of the wind at the surface. If the evaporation observations are made in a shallow tank of quiet water, we have then the still further difficulty of computing what the results would be on the surface of a flowing stream or lake of much greater depth. On page 24, Professor Carpenter says:

> It will be noticed that the evaporation from the tanks floating in the various lakes is much greater than that from the corresponding tank on the grounds of the Agricultural College, which latter tank is of galvanized iron, 3 feet square and 3 feet deep, set in the ground at Fort Collins, so that its rim is flush with the surface of the ground. The elevation is 4,990 feet above the sea level, latitude 40° 34′, longitude 105°. The rain which falls into the tank is allowed for in accordance with the readings of a standard rain gauge near by.
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> The excess of evaporation from the tanks floating in the lakes over that from the tank sunk in the ground is partially, but not entirely, due to temperature. The tanks in the lakes are more freely exposed to the wind than the standard tank, and this would, therefore, make a great difference. The floating tanks are more or less agitated by the waves, and, consequently, the water surface exposed to the air is larger than the cross section of the tank. A film of water is also left on the metal side with every movement of the floating tanks, and this water is apt to be of a higher temperature than the water in the lake or in the tank and evaporates more rapidly. This influence was noticed by Mr. Trimble, who suggested it as a cause of some of the excess of evaporation observed from the lakes. The effect may be considerable, but how much is uncertain. The wave action differs in the different lakes. As the waves also increase the area of the surface of the lakes, which is exposed to the wind, the resulting measurement in the tank is possibly closer to the loss from the lake than if the tank had been stationary. The effect of increase of surface was an increase of 33 per cent, as deduced from the observations by Aymard in 1849.
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> Professor Carpenter gives the following estimate of evaporation from the surface of an open reservoir, at Fort Collins, as based on ten years of observations and corresponding, therefore, to the average cloudiness, windiness, and relative humidity of that location:

	Evaporation, in inches.
January	1.5
February	2.0
March	3.5
April	5.0
May	6.5
June	8.0
July	9.5
August	8.5
September	6.5
October	4.5
November	2.5
December	1.5
Total	59.5

The loss of water from either the natural or artificial reservoir may in part be due to seepage or the gradual filtration through the soil, but when the coarse gravels and sands of a freshly made reservoir are filled up by finer particles of clay we shall not be surprised to find that in such cases the filtration and seepage are quite small or inappreciable. When no such clay or silt or other fine sediment is formed the loss by seepage may entirely prevent the reservoir from holding water. In the Rigden Lake, Professor Carpenter finds the seepage to be about two feet in depth per year, and other cases of much greater loss are on record even after the adjacent subsoil may be supposed to have been entirely well filled with water. Everything depends upon the character of the soil, the deposit of silt, and the packing of clay.

Special attention has been given by Professor Carpenter to the temperature of the water in the standard evaporation tank and also in the reservoirs and lakes. As regards the tank, temperatures were observed at 7 a. m. and 7 p. m. as also by self-recording maximum and minimum thermometers, all near the surface. The mean of the 7 a. m. and 7 p. m., [one hundred and fifth meridian time] is less than the mean of the maximum and minimum by about 3.5°, and the latter is probably much closer to the true average. The difference is attributable to the fact that during the daytime the surface

heats rapidly and the lower layers slowly, but during the nighttime the whole mass cools more uniformly. On the average of ten years the surface temperature in the tank, namely, the average of the 7 a. m. and the 7 p. m., is as follows:

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April	49.0
May	58.9
June	67.9
July	72.7
August	70.8
September	63.4
October	51.2
November	41.6

During the other months of the year the tank, of course, is frozen.

The temperature of the free water in Lake Lee, at the surface and at the bottom 6 feet below, as also the temperature of the water in a small tank floating at the surface of Lake Lee, was read every fifteen minutes on August 6, 1896. Lake Lee is a small reservoir 4 miles from the college, shallow, exposed to the wind, and full of weeds that greatly hinder the formation of waves. The following is the temperature record:

Time of observation.	Clouds, tenths.	Wind.	Temperature of water.		
			Tank.	Lake.	
				Surface.	Bottom.
9:00 a. m	.....	.....	71.0	70.2	68.8
9:15 a. m	Few.	.....	72.0	70.5	68.2
9:30 a. m	Few.	Lt. SE.	72.0	70.7	68.0
9:45 a. m	Few.	Lt. SE.	72.0	71.2	67.7
10:00 a. m	Few.	E.	72.0	71.0	68.0
10:15 a. m	1	.....	72.8	71.7	68.8
10:30 a. m	1	Lt. SE.	73.7	72.3	69.0
10:45 a. m	2	Lt. SE.	74.0	72.9	68.6
11:00 a. m	2	Lt. SE.	74.0	73.0	68.5
11:15 a. m	3	Lt. SE.	74.0	73.0	68.2
11:30 a. m	3	Lt. SE.	73.2	72.9	68.5
11:45 a. m	3	Lt. SE.	74.0	73.1	69.1
12:00 noon	2	Lt. SE.	74.2	73.2	69.2
12:15 p. m	2	Lt. SE.	74.8	74.0	68.8
12:30 p. m	2	Lt. SE.	74.4	74.0	68.8
12:45 p. m	3	Lt. SE.	74.5	74.2	69.1
1:00 p. m	4	Lt. SE.	74.0	73.9	68.3
1:15 p. m	6	.....	74.2	74.2	68.7
1:30 p. m	7	Brisk N.	73.8	73.8	69.1
1:45 p. m	5	Lt. E.	74.0	74.0	69.4
2:00 p. m	4	Lt. S.	74.9	74.7	69.8
2:15 p. m	3	W.	75.7	76.0	69.4
2:30 p. m	2	W.	75.5	76.0	69.5
2:45 p. m	2	.....	76.0	77.0	70.0
3:00 p. m	1	SE.	76.6	77.2	69.3
3:15 p. m	2	SE.	76.2	76.4	69.8
3:30 p. m	2	SE.	76.2	76.0	69.0
3:45 p. m	2	SE.	76.0	76.0	69.3
4:00 p. m	1	SE.	76.0	76.0	68.8
4:15 p. m	2	E.	75.8	76.0	68.2
4:30 p. m	3	None.	76.0	76.2	69.0
4:45 p. m	5	N.	75.6	76.7	68.7
5:00 p. m	.....	.....	75.5	76.8	68.6

In reference to this table Professor Carpenter writes to the Editor as follows:

At different times we have carried on observations throughout the twenty-four hours on the evaporation tanks, measuring the temperature at the surface, and at one foot below the surface. One of the most marked results was that the average temperature, as determined by observations at twelve hours' interval, was less than the true average by several degrees. The increase in temperature during the day at the surface is quite rapid, and the surface temperature becomes much warmer than the water below the surface. On cooling, however, convective currents form, and the whole mass of water practically cools together.

I had observations carried on at hourly intervals for several days, at the surface and one foot below, which showed this fact clearly. For the last three or four years I determined the average temperature from the maximum and minimum temperatures instead of from the observations at 12-hour intervals, as had been done before.

CLIMATOLOGY.

In a recent letter from Mr. R. DeC. Ward, of Harvard University, into whose hands Prof. William M. Davis has recently resigned his classes of instruction in meteorology, Mr. Ward says:

I am interested in your note on page 168 on the use of the word climatology. I quite agree that those who study this subject from the botanic or agricultural point of view should use some such compound word as agricultural or botanic climatology. The word climatology alone means what we may describe as general climatology. In my own studies, which concern chiefly the human side of climatology, i. e., the relations of climate and man, I have adopted the compound word anthropo-climatology (Science, November 20, 1896, pp. 749–750). It seems to me that this side of climatology is so special that it should not be designated as climatology pure and simple, any more than the agricultural or botanic side of climatology should be so designated.

BLUE HILL OBSERVATORY.

The following statement by the Editor in the MONTHLY WEATHER REVIEW for December, 1897, page 541, describing the meteorological stations of Harvard University, "By an arrangement with the Park Commissioners of the city of Boston, the upper portion of Blue Hill was purchased in 1875, and transferred to the care of Harvard Observatory. This hill is about eight miles south of the observatory," * * * contains an unfortunate typographical error, lately discovered by the Editor, and included in the corrigenda published in the proper place in the current number of the MONTHLY WEATHER REVIEW.

Meanwhile, Mr. Rotch, Director of the Observatory, has, independently, called our attention to this error, and furnishes the following accurate brief historical note on the relations between the Harvard and Blue Hill observatories:

The Blue Hill Meteorological Observatory was established by A. Lawrence Rotch in 1885 upon Great Blue Hill, 12 miles south of Harvard Observatory and several miles outside the limits of the city of Boston. About 60 acres of land on Blue Hill were subsequently purchased by Mr. Rotch to guard his observatory against encroachment. In 1893 the Blue Hills were taken by the Commonwealth of Massachusetts for a public reservation, and although the land owned by Mr. Rotch was paid for, the observatory was allowed to remain. In order to insure the continuance of the observations under invariable conditions of exposure, the land upon which the observatory stands and immediately surrounding was, at Mr. Rotch's request, leased by the Commonwealth to Harvard College in 1896 for ninety-nine years. The expense of maintaining the observatory, which now exceeds $4,000 a year, continues to be paid by Mr. Rotch, but the cost of publishing the observations and investigations, annually or oftener, since 1887, in the Annals of the Astronomical Observatory of Harvard College, is shared by the Harvard Observatory.

INSURANCE AGAINST DROUGHT.

The Editor has received from Mr. Blythe, Weather Bureau observer at Phœnix, Ariz., a published article, by Mr. Chas. W. Pugh, advocating the insurance of crops and other property against destruction by drought. He states that there are several forms of insurance for live stock, crops, and other farm products; they are insured against fire, water, hail, lightning, hot winds—why not against droughts? The amount of injury and the chance of injury from drought can easily be ascertained by the study of local statistics during the past twenty-five years. The insurance company will have to give an exact definition of drought and establish a rate of insurance. The policy holder will have to prove that a given injury was really due to a drought.

This new feature of insurance seems perfectly feasible, but it would at the present time not be possible to carry out one of the items suggested by Mr. Pugh, viz, that the Weather Bureau shall make a general prediction of the coming season so that the farmers in any locality may know whether it is worth while to insure against drought as predicted for a given season. There are two objections to this feature: First, that the Weather Bureau has not attempted to make seasonal predictions, much less scored any great success therein. Second, that when it does do this successfully then the insurance companies will make nothing and, therefore, quickly be broken up, since their customers will patronize them only when they are sure that droughts are coming.